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Abstract Submission Form

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Determination of smoking-related DNA adducts in human tissues

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Molecular events of tobacco-associated carcinogenesis involve the formation of covalent DNA addition products (DNA adducts) of carcinogen metabolites which is considered a necessary early step in this adverse process. The ^{32}P-postlabelling technique was used for the determination of bulky aromatic adducts in uninvolved bronchial tissues and peripheral blood lymphocytes from one hundred patients undergoing lung surgery. Smokers exhibited a significantly higher level of bronchial DNA adducts than non-smokers. Bronchial DNA adduct levels of former smokers who stopped smoking less than a year ago did not differ significantly from those of current smokers which indicates the persistence and slow repair of this type of DNA damage. Small alkylated adducts are partly repaired by the O^6-alkylguanine alkyltransferase. Activity of this enzyme was measured in lung tissues of the same patients and it was elevated in smokers. Levels of DNA adducts and activity of O^6-alkylguanine alkyltransferase were not significantly different between the cancer and non-cancer groups of patients. Genotoxic effect of smoking was clearly shown but direct quantitative association between the investigated markers and manifestation of lung cancer was not found.

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